

CLAIMS

① A substrate suitable for printing a toner image thereon, comprising:  
a sheet of plastic;

5 an underlayer coating, on the sheet of plastic, comprising a first polymer material comprising a polymer chosen from the group consisting of amine terminated polyamide, a silane coupling agent and amino propyl triethoxy silane;

an overlayer coating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed.

10 2. A substrate according to claim 1 wherein the overlayer is substantially free of particulate matter.

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A  
15 3. A substrate according to claim 1 or claim 2 wherein the overlayer is substantially wax and pigment free.

④ A substrate suitable for printing a toner image thereon, comprising:  
a sheet of plastic;

an underlayer coating, on the sheet of plastic, comprising a first polymer material;

20 an overlayer coating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed, the second polymer consisting essentially of a polymer chosen from the group consisting of ethylene acrylic acid copolymer, polyvinyl pyridine and styrene butadiene copolymer, characterized in that the overlayer is substantially wax and pigment free.

25 5. A substrate according to claim 4 wherein the overlayer is substantially free of particulate matter.

30 6. A substrate suitable for printing a toner image thereon, comprising:  
a sheet of plastic;

an underlayer coating, on the sheet of plastic, comprising a first polymer material;

an overlayer coating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed, the second polymer consisting essentially of a polymer chosen from the group consisting of ethylene acrylic acid copolymer, polyvinyl pyridine and styrene butadiene copolymer,  
 5 characterized in that the overlayer is substantially free of particulate matter.

*claims 1, 4 or 6*  
 A 7. A substrate according to any of the preceding claims wherein the sheet of plastic is polyethylene.

*1, 4, or 6*  
 A 10 8. A substrate according to any of claims 1-6 wherein the sheet of plastic is vinyl.

*1, 4, or 6*  
 A Sub B3 9. A substrate according to any of claims 1-6 wherein the sheet of plastic is polycarbonate.

*1, 4, or 6*  
 A 15 10. A substrate according to any of claims 1-6 wherein the sheet of plastic is PET.

*1, 4, or 6*  
 A 11. A substrate according to any of claims 1-6, wherein the sheet of plastic is BOPP.

*claims 1, 4 or 6*  
 A 20 12. A substrate according to any of the preceding claims wherein the overlayer comprises styrene butadiene copolymer.

13. A substrate suitable for printing a toner image thereon, comprising:  
 a sheet of BOPP plastic;

an underlayer coating, on the sheet of plastic, comprising a first polymer material;

25 an overlayer coating, directly on the underlayer, comprising a second polymer material and having an outer surface to which a toner image can be fused and fixed, the second polymer consisting essentially of a polymer chosen from the group consisting of ethylene acrylic acid copolymer and polyvinyl pyridine.

*1, 4, 6 or 13*  
 A Sub B3 30 14. A substrate according to any of claims 1-11 or 13, wherein the overlayer comprises ethylene acrylic acid copolymer.

15. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of less than 18%.

16. A substrate according to claim 14 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of less than 16%.

*claim 14*  
A 17. A substrate according to ~~any of claims 14-15~~ wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of more than 8%.

*claim 14*  
A 18. A substrate according to ~~any of claims 14-15~~ wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of more than 12%.

*1, 4, 6 or 13*  
A 19. A substrate according to any of ~~claims 1-11 or 13~~ wherein the overlayer comprises polyvinyl pyridine.

*claims 1, 4, 6 or 13*  
A 20. A substrate according to any of ~~the preceding claims~~ wherein the underlayer comprises amine terminated polyamide.

*1, 4, 6 or 13*  
A 21. A substrate according to any of ~~claims 1-19~~ wherein the underlayer comprises a silane coupling agent.

*1, 4, 6 or 13*  
A 22. A substrate according to any of ~~claims 1-19~~ wherein the underlayer comprises amino propyl triethoxy silane.

*claims 1, 4, 6 or 13*  
A 23. A substrate according to any of ~~the preceding claims~~ wherein the underlayer has a weight of between 0.1 and 1 grams per square meter.

*claims 1, 4, 6 or 13*  
A 24. A substrate according to any of ~~the preceding claims~~ wherein the underlayer has a weight of between about 0.3 and 0.5 grams per square meter.

*claims 1, 4, 6 or 13*  
A 25. A substrate according to any of ~~the preceding claims~~ wherein the overlayer has a weight of between 0.1 and 10 grams per square meter.

26. A substrate according to any of the preceding claims wherein the overlayer has a weight of between 0.2 and 2 grams per square meter.

27. A substrate according to claim 26 wherein the overlayer has a weight of between about 0.25 and about 0.35 grams per square meter.

28. A substrate according to any of the preceding claims wherein the underlayer is substantially free of particulate matter.

29. A substrate according to any of the preceding claims comprising only two coating layers.

30. A method of producing a coated substrate which a toner image can be adhered comprising:

coating a sheet of plastic with a first polymer material as an underlayer, the underlayer comprising a polymer chosen from the group consisting of amine terminated polyamide, a silane coupling agent and amino propyl triethoxy silane;

directly overcoating the underlayer with an second polymer material to form an overlayer coating on the underlayer, the overlayer having an outer surface to which a toner image can be adhered and fixed.

31. A method according to claim 30 wherein the coated substrate is a substrate according to any of claims 26-29.

32. A substrate produced according to the method of claim 30 or claim 31.

33. A substrate comprising a sheet of BOPP and an outer coating consisting substantially only of a polymer chosen from the group consisting of ethylene acrylic acid copolymer, and polyvinyl pyridine.

34. A substrate according to claim 33 wherein the coating comprises polyvinyl pyridine.

35. A substrate according to claim 35 wherein the coating comprises ethylene acrylic acid copolymer.

36. A substrate according to claim 35 wherein the ethylene acrylic acid copolymer has an acrylic acid comonomer percentage weight of less than 18%.

37. A printing method comprising:  
 providing a substrate according to any of claims 1, 4, 6, 13 or 33 or produced according to claim 30 or claim 31; and  
 printing a toner image on the substrate.

38. A printing method according to claim 37 wherein the toner image is a liquid toner image.

39. A printing method according to claim 37 or claim 38 wherein printing comprises transferring the toner image to the substrate using heat and pressure.

40. A printing method according to claim 37 or 38 wherein printing comprises electrostatically transferring the toner image to the substrate.

41. A printing method according to claim 37 and comprising:  
 forming the image on an image forming surface;  
 transferring the image from the image forming surface to an intermediate transfer member; and  
 transferring the image from the intermediate transfer member to the substrate.

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